UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/647,776	10/05/2000	Noam Gavriely	031/01844	3911

7590 03/29/2005

Roy N Envall Jr
Anthony Castorina
Suite 207
2001 Jefferson Davis Highway
Arlington, VA 22202

EXAMINER	
LAO, LUN S	

ART UNIT	PAPER NUMBER
2643	

DATE MAILED: 03/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/647,776	GAVRIELY ET AL.	
	Examiner	Art Unit	
	Lun-See Lao	2643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 October 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Introduction

1. This action is response to preliminary amendment filed on 10-05-2000.Claims 3,5,9-11, 14,18-21, 24-25 and 28, claims 32-33 have been added. Claims 1-33 are pending.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 and 8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The driven ".airborne sound cancellation circuitry which receives the first and second signals and produces an output signal comprised of first and second portions, in a third ratio higher than said first ratio in response to said first and second signals (see specification page 3 line 6-8) was not supported in the further detail in the specification nor in any of the claim.

Claim Objections

3. Claim 1 is objected to because of the following informalities: claim 1 recites " a third ratio" on line13, which appears to be ---second ratio---". Appropriate correction is required.

4. Claim 8 is objected to because of the following informalities: claim 1 recites " a third ratio" on line12, which appears to be ---second ratio---". Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-22 and 24-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Harley (US PAT. 5,539,831).

Consider claims 1 and 8, Harley teaches device for detecting sounds generated within a body comprising:

a primary sensor (see figs1-2, (3)) placed on the body which receives first sound vibrations caused by the sounds generated within the body and second sound vibrations caused by airborne sound and which generates a primary electrical sensor signal in response thereto comprised of first and second portions, in a first ratio,

responsive to said first and second sound vibrations respectively (see col. 4line 27-col.5 line 40); and

a secondary sensor (see figs. 1-2, (8)) mechanically or acoustically coupled to the first sensor internally in the device, which receives said first sound vibrations via said coupling and which receives said second vibrations directly from the air in addition to any such vibrations received via the coupling and which generates a secondary electrical sensor signal in response thereto inherently (because the primary sensor picks up the signal is different from second sensor picks up a signal) comprised of first and second portions in a second ratio different from said first ratio (see col.2 line 59-67); and

airborne sound cancellation circuitry (see fig.1) which receives the first and second signals and produces an output signal comprised of first and second portions, in a third ratio higher than said first ratio in response to said first and second signals (see col.5 line 40-col.6 line 48 and col.6 line 49-col.8 line 55).

Consider claims 2-4 and 9 Harley teaches a device of the second portion of said primary sensor (see fig.2, 3) signal is arranged such that it is responsive to airborne sound which travels to said primary sensor via said body (see fig.1 and col.5 line 13-col.6 line 31), and a device of the primary sensor (see fig.2, 3) comprises a primary membrane (7) and a primary transducer (4), wherein the primary transducer (4) produces said primary sensor (3) output responsive to deformations of the primary membrane (7 and see col. 5 line 13-col.6 line 31) and the primary transducer is a piezoelectric element (see col.4 line 32-45).

Consider claims 5-6 and 10 Harley teaches a device of the secondary sensor (see fig.2,8)

comprises a secondary membrane (84, potting) and a secondary transducer (83), wherein the secondary transducer produces said secondary sensor (8) signal responsive to deformations of the secondary membrane (84 and see fig.1 and col.5 line 13-col.6 line 31); and a device of the second transducer is a piezoelectric element (see col.5 line 13-30).

Consider claim 7, Harley teaches a device for measurement of sounds conducted from the interior of the body to its surface in the presence of airborne sounds conducted through the body comprising:

a primary sensor(see difs.1-2 (3)) comprising a primary membrane and a primary transducer, wherein the primary transducer (4) produces a primary sensor output signal responsive to deformations of the primary membrane (7 potting)

a secondary sensor (8) mechanically or acoustically coupled to the first transducer (4), internally to the device and comprising a secondary membrane (84) and a secondary transducer (83), wherein the secondary transducer (83) produces a secondary sensor (8) output signal responsive to deformations of the secondary membrane (84) (see col.4 line 27-col.5 line 40); and

airborne sound cancellation circuitry (see figs 1,4) which combines a signal derived from said secondary sensor output signal and a signal derived from said primary output signal to produce an output signal having a reduced component responsive to the

airborne sound as compared (by weighting factor) with that present in said primary output signal (see col.5 line 40-col.6 line 48 and col.7 line 1-col.8 line 55).

Consider claims 11-13 and 32 Harley teaches a device of the cancellation circuitry comprises an equalizer (such as DSP) which adjusts the amplitude of at least one of the primary sensor and secondary sensor (see figs1-2 (3,8)) signals to reduce the component in the output signal that is responsive to the airborne sound (see col.9 line 60-col. 10 line 42); and a device of the equalizer (DSP) provides a frequency dependent adjustment to at least one of the primary and secondary signals (see col.9 line 60-col. 10 line 42); and a device of the equalizer (DSP) provides a frequency independent adjustment to at least one of the primary and secondary signals (see fig.1 and col.9 line 60-col.10 line 42).

Consider claims 14-17, Harley teaches a device including equalizer adjustment circuitry which, in a calibration mode adjusts the equalizer to reduce the second portion of the output signal in response to an airborne sound (see fig.1 and col.6 line 49-col.8 line 55) and a device including a sound generator which, during the calibration mode, produces an airborne sound and wherein said adjustment circuitry adjusts (see figs 1,4) said equalizer circuitry to reduce the response of the device to a minimum value (see col.6 line 49-col.8 line 55); and a device produced airborne sound is essentially a single frequency sound (see col.1 line 56-61 and col.4 line 32-col.5 line 54); and a device of the sound generator produces airborne sound at a plurality of frequencies in said calibration mode (see col.6 line 49-col.8 line 55).

Consider claims 18-20, Harley teaches a device of the secondary membrane is coated a material (polyurethane) to reduce the response of the secondary sensor to airborne signals (see col. 4 line 33-col.5 line 40); and a device of the secondary membrane is coated with a film to have a response similar to that of the human skin (such as polyurethane and col. 4 line 33-col.5 line 40); and a device of the secondary membrane (see fig.2, 84) is of a different thickness than the primary membrane (7) to reduce the response of the secondary sensor to airborne signals (see col.4 line 33-col.5 line 40).

Consider claim 21-22 and 24-25, 33, Harley teaches a device of the mechanical or acoustical coupling causes vibrations of the primary membrane (see fig.2, 7) to induce vibrations of the secondary membrane (84 by second cavity air 61 through 81 and see col.4 line 33-col.5 line 40); and a device (see fig.2) of the coupling comprises a closed volume of gas (such as cavity, 60-61 and 80-81) and wherein the primary and secondary membranes (7 and 84) each form portions of an enclosure of the volume (see figs.1-2 and col.4 line 33-col.5 line 40) and the membrane device the membrane is a metallic (see fig.2,5 and col.4 lines 33-45); and a method of detecting sounds generated in a body in the presence of airborne sounds comprising:

placing a device to against the body, such that the first sensor contacts the body; and producing an output signal (see fig.1 and col.4 line 27-col.5 line 54).

Consider claim 26, Harley teaches a method of reducing the effect of airborne sound on a measurement of sounds produced in a body and measured at the surface thereof comprising:

Providing (see figs 1-2 (3)) a signal responsive to sound produced in the body and measured at the surface of the body and contaminated by a signal responsive to said airborne sounds (see fig.1 (1,2));

providing (see figs. 1-2(8)) a second signal having at least a component responsive to said airborne sounds and a component responsive to said body sounds (see cool.5 line 2-col.6 line 48); and

processing (see fig.1, 10) the first signal utilizing the second signal to produce an output signal having a reduced the relative amplitude of the signal responsive to airborne sounds as compared (by weighting factor) with the first signal (see col.7 line 1-col.8 line 55).

Consider claims 27-28, Harley teaches a method of providing a second signal comprises providing a second signal having a component responsive to sound produced in. the body wherein the relative polarity of the signals responsive to the airborne and body produced sounds different for the second signal as compared to the first signal (see fig.1 and col.6 line 49-col.8 line 55) and a method including adjusting at least one of the first and second signals to further reduce the relative amplitude of the signal responsive to the airborne sounds (see figs 1-4 and col.7 line 1-col. 8 line 55).

Consider claims 29-31, Harley teaches a method of the adjustment is determined during a calibration stage comprising:

Placing (see figs. 1-2) a device providing the first and second signals on the body in a position at which such measurement is to be made

providing an airborne audio signal (see fig.1, (1,2));

adjusting (see fig.4) at least one of the first and second signals to minimize the response of the output signal to said provided airborne signal; and

utilizing said adjustment (by Fourier transfer function) when measuring body sounds (see col.7 line 1-col.8 line 55); and method the adjustment is frequency insensitive (see figs. 1-4 and col. 7 line 1-col.8 line 55); and a method of the adjustment varies with frequency (col.9 line 66-col.10 line 56).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claim 23 rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's prior in view of Harley (US PAT 5,539,831) in view of Adler (US PAT. 3,525,810)

Consider claim 23 Harley teaches a device (see fig.2) of the coupling comprises a closed volume of gas (such as cavity, 60-61 and 80-81) and wherein the primary and secondary membranes (7 and 84) each form portions of an enclosure of the volume (see figs.1-2 and col.4 line 33-col.5 line 40), but Harley fails to teach a closed volume of liquid.

However, Adler teaches a closed volume of liquid (see fig.2, 38 and col.col.3 lines 13-64).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was wade to combine the teaching of Adler to Harley to provide to limit the magnitude of the force with which the fluid-filled casing can engage the body surface for preventing excessive deformation thereof.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hossack (US PAT 5,735,282); Scalise (US PAT 5,812,678); and EUCKERWAR A. J. et al; "Development of a Piezopolymer Prusure Sensor for a Portable Fetal Heart Rate"; IEEE □rransactions on Biomedical Engineering; Vol. 40; No. 9; pp. 963-969; 1 September 1993. are recited to other related sensor for body sounds

10. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:(703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao,Lun-See whose telephone number is (703) 305-2259 The examiner can normally be reached on Monday-Friday from 8:00 to 6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz, can be reached on (703) 305-4708.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (703) 306-0377.

Lao,Lun-See
Patent Examiner
US Patent and Trademark Office
Crystal Park 2
(703305-2259

DUC NGUYEN
PRIMARY EXAMINER